

**AN INTEGRATED OPTICAL CIRCUIT HAVING AN INTEGRATED  
ARRAYED WAVEGUIDE GRATING (AWG) AND OPTICAL  
AMPLIFIER(S)**

**ABSTRACT OF THE DISCLOSURE**

5 An integrated optical circuit includes waveguides formed in the integrated  
optical circuit. One set of waveguides is a set of optical amplifiers doped with rare  
earth ions. A second set of waveguides is a multiplexer or demultiplexer, such as an  
arrayed waveguide grating (AWG). The set of optical amplifiers and the AWG are  
coupled together via waveguides formed in the integrated optical circuit. Other  
elements on the integrated optical circuit are coupled to the set of optical amplifiers  
and the AWG via optical fibers. The spectral response of the AWG is modified to  
compensate for the spectral gain of the AWG. The lengths of the individual optical  
amplifiers in the set of optical amplifiers may be varied to cause uniform power  
10 distribution across channels. The integrated optical circuit also has a pump coupler to  
couple a pump source to the set of optical amplifiers.

09982227-101701